



MARSHALL STAR

Serving the Marshall Space Flight Center Community

July 4, 2002

Safety Message

From Administrator Sean O'Keefe

The success of this historic agency starts with an unwavering commitment to safety. In April, we corresponded on NASA's responsibility to protect the safety of our people and our valuable assets, on and off the ground. In the past week, we have witnessed clear examples of how integrity and a dedication to excellence lead to making the right choice.

On June 24, the Office of Space Flight made a decision to delay the launch of the Space Shuttle Columbia on STS-107 — not because of a problem with the orbiter — but because tiny cracks were discovered in metal liners used to direct the fuel flow inside propellant lines on two different orbiters. Ron Dittmore and his outstanding team made the decision to delay Columbia's launch until we better understand the cause of the cracks and their possible impact on our orbiter fleet at launch. This kind of responsible approach is essential to the safety and success of our exploration objectives.

The landing of the Space Shuttle Endeavour ended a U.S. record-breaking mission for Expedition Four crewmembers Daniel Bursch and Carl Walz. Their stay on board the International Space Station was extended, in part, because the launch of STS-111 fell victim to Florida's often-violent late afternoon thunderstorms. Despite some disappointing attempts, the dedicated launch team held fast to its strict protocol and safely sent Endeavour on its way June 5.

When it came time to bring the crew home, Mission Control waived off initial landing opportunities due to unacceptable weather conditions at the Florida runway and directed Endeavour to its alternate landing site at Edwards Air Force Base in California — a decision driven by our commitment to safety.

Also on June 24, the NOAA-M weather satellite was launched from Vandenberg Air Force Base. We all should be impressed by the interagency cooperation, the attention to

See Safety on page 4



Photo by Emmett Given, NASA/Marshall Center

Happy Birthday USA!

A Fourth of July parade features participants from Marshall's Child Development Center, including Cody Phillips, left, on his bicycle, and Katelyn Pepper, right, on her tractor. The parade was held Monday at Solar Circle and Mercury Road at the Marshall Center. For more photos, see page 3.

Was Einstein wrong? Space Station research may find out

JPL news release

Ultra-precise clocks on the International Space Station and other space missions may determine whether Albert Einstein's Special Theory of Relativity is correct and could dramatically change our understanding of the universe.

The theory, introduced in 1905, holds that if an observer moves at a uniform speed, no matter how fast or in what direction, the laws of physics and the speed of light are always the same. For example, if you stand still and drop a coin, it will fall straight down. Similarly, if you drop a coin inside a car while you're driving down the freeway at a steady speed, it will also fall straight down.

However, recent theories attempting to combine gravity and

See Einstein on page 2

Einstein

Continued from page 1

particle physics suggest that relativity might not always apply — changes in space and time may occur that could not be measured easily on Earth.

“The International Space Station will have ultra-sensitive clocks on board, and it is a good place to test the theory,” said Dr. Alan Kostelecky, professor of physics at Indiana University, Bloomington. “By comparing extremely precise clocks that can operate under zero gravity, minuscule changes in the ticking rate might be found as the spacecraft moves around Earth.” This would violate Einstein’s theory, which says there should be no change if different clocks in the same gravity environment are compared.

“Finding such changes would cause an upheaval in the science community and revolutionize our thinking about the fundamental structure of space and time,” Kostelecky said. “It would lead to insight about how our universe formed and how nature operates.”

Measurements in space have several advantages over ones on Earth because the Earth’s rotation axis and its rotation rate are fixed. In space the orbital axis of a satellite and its rotation rate can be different and higher speeds are possible. Measurements in space would therefore be more sensitive to minute changes that would violate Einstein’s Theory of Relativity.

Kostelecky and his colleagues Robert Bluhm of Colby College, Waterville, Me.; Charles Lane of Berry College, Mount Berry, Ga.; and Neil Russell of Northern Michigan University, Marquette, propose using specific types of clocks on the space station. For example, one type would use a maser, a cousin of the

laser. Instead of emitting light, like a laser, the maser emits microwave energy at a specific frequency, which produces a very specific ticking.

Other types of clocks already planned for flight on the International Space Station could be used too. Upcoming missions include the Primary Atomic Reference Clock in Space, the Rubidium Atomic Clock Experiment and the Superconducting Microwave Oscillator. All three are part of NASA’s Fundamental Physics Program. In addition, the Atomic Clock Ensemble in Space will be flown on the International Space Station by the European Space Agency.

Kostelecky says clock experiments in space may yield other intriguing results. For example, they might provide evidence for string theory. Traditionally, scientists have believed that the smallest units in the universe are particles. However, advocates of string theory believe the smallest units are elongated, like tiny pieces of string. In some string theories, empty space has an intrinsic direction. This could cause the clocks on the space station to tick at changing rates, depending on their orientation.

In addition to the International Space Station, other future missions may also test the Theory of Relativity. The proposed SpaceTime mission would fly three clocks past Jupiter, then would drop the spacecraft rapidly in toward the Sun, like an extreme version of an amusement park freefall ride. The high speed of this NASA mission would make possible new kinds of sensitive tests.

Kostelecky conducts research under NASA’s Fundamental Physics in Microgravity Research Program, part of NASA’s Office of Biological and Physical Research.



Courtesy photo

Space Launch Initiative’s RS-83 engine team visits Kennedy

The RS-83 engine teams from Marshall and Rocketdyne recently visited Kennedy Space Center to get information on engine processing, maintenance and ground operations. The two teams, shown at the Space Shuttle Main Engine Processing Facility, are using “lessons learned” from the Shuttle program to help design a second generation engine for the Space Launch Initiative.

Ground breaking for Advanced Propulsion Research Lab Monday

The Marshall Center will break ground on its new state-of-the-art Propulsion Research Laboratory Monday, July 8 at 10 a.m.

The 108,000 square-foot facility will become home to research into new and innovative space transportation and propulsion technologies.

Center Director Art Stephenson, U.S. Sen. Richard Shelby and U.S. Rep. Bud Cramer will speak to attendees and participate in the ground breaking. Others scheduled to attend include Huntsville Mayor Loretta Spencer and Madison Mayor Jan Wells.

The Propulsion Research Laboratory is south of the Bldg. 4200 Administrative complex, northeast of Morris and Neal Roads.

Children's parade shows Marshall's patriotic spirit



Photos by Emmett Given, NASA/Marshall Center

Lila Paseur and her son Caleb enjoy the festivities.



Trevor Briggs gets into the spirit of the parade as the "Statue of Liberty." The children's parade was hosted by the Marshall Child Development Center on Monday at Solar Circle and Mercury Road.



Lisa Alexander manages a wave as she pulls Amaya Alexander and Caleb Lee during the parade.



Rae Ann Meyer and her daughter Alexandra.



Kathy Jones waves the flag over a wagon carrying, from left, Will Ogelsby, Jackson Durham and Jennifer Jones.



Children were not the only ones getting into the day's festive spirit. From left, Lynn Southgate, Sherry Landers, Kathy Lundy, Pat Burrow and Kandy Hayden.

Safety

Continued from page 1

detail, and the commitment to safety and mission success exhibited by everyone involved in this important mission. After witnessing the launch, I stopped to visit our team at Dryden as they prepared Endeavour for its cross-country ride back to the Kennedy Space Center atop the NASA 747 transport. While time consuming and/or at variance with the original launch schedule, these activities are conducted with safety as the paramount objective.

The culture of this institution is one of safe accomplishment of our missions and I ask that all of us help NASA carry on this legacy. If something about your job or task is unclear, ask for clarification. No activities are important enough to compromise your safety or the safety of our colleagues at this Agency. If you suspect something isn't quite right, trust your instincts and your experience.

With this ethos, we will continue to safely push the frontiers of exploration and discovery as only NASA can. Keep up the good work.

Sean O'Keefe
NASA Administrator



Author James Chiles discusses why disasters happen and ways to avoid them

by Dr. Stephen Waring

James Chiles, author of "Inviting Disaster: Lessons from the Edge of Technology," recently gave a presentation at the Marshall Center as a guest of the Marshall Association.

Chiles told the Marshall audience that "mistake" is a bad word in American culture and that "failure" is even worse. After a disaster, this bias can be exploited, recklessness presumed and, finally, scapegoats named to take the blame.

Rather than studying disaster to find culpability, Chiles believes that past disasters offer lessons on how to avoid future accidents.

In his book, Chiles recounts dozens of technological disasters, explores patterns in their origins and offers advice about how to avoid them in the future. The book explores several accidents in NASA's past, including Apollo 1, Apollo 13, the Hubble mirror, the Space Shuttle Challenger and the Mars probes.

Chiles said that in technological systems, with high energy and high complexity, an ordinary error might trigger an extraordinary failure, though multiple small failures usually precede a catastrophe. For example, a single piece of metal might fracture, causing a ripple effect that destroys a whole system. Engineers can make errors in design and analysis or overlook signals that indicate problems.



Chiles

Although experts understand risks, less knowledgeable operators and managers may not understand risks. This can lead to a failure to report problems because they do not know the consequences of hardware failure.

Chiles said experts should not accept errors, but should expect them. When they find an error, they should take responsibility for reporting and fixing it. They should design resilient and redundant systems so that a failure of a single point will not lead to catastrophe.

The writer is a co-author of "Power to Explore" and a visiting historian at the Marshall Center.

Job announcements

MS02D0056, AST, Technical Resources Management. GS-801-07/09/11, Space Shuttle Projects Office. No closing date.

MS02C0164, AST, Flight Systems Design. GS-861-14, Space Transportation Directorate, Subsystem & Component Development Department, Mechanical Design Group. Closes July 5.

MS02C0168, Safety & Occupational Health Specialist. GS-018-12, Safety and Mission Assurance Department, Industrial Safety Department. Closes July 8. Competitive Placement Plan.

MS02N0165, Information and Protocol Specialist. GS-100-11, Customer and Employee Relations Directorate. Closes July 10. This is a reassignment bulletin. Applications will not be accepted for promotional opportunities.

MS02C0169, AST, Structural Materials. GS-0806-14, Engineering Directorate, Materials, Processes & Manufacturing Department, Non-metallic Materials & Processes Group. Closes July 9. Competitive Placement Plan.

MS02C0170, Quality Assurance Specialist (Aerospace). GS-1910-13, Safety and Mission Assurance Office, Advanced Projects Assurance Department. Closes July 5.

MS02N0166, AST, Aerospace Information Technology. GS-0854-12 with promotion potential to GS-13, Engineering Directorate, Structures, Mechanics and Thermal Department. Closes July 8. Applicants at the GS-13 level are encouraged to apply. It is not the intent to immediately promote the successful applicant from the GS-12 or GS-11 level.

Center Announcements

University scholarships available

Two university scholarships sponsored by the Marshall Association are available for incoming freshmen in September. Both technical and non-technical scholarships will be awarded. The Association will accept applications for the scholarships until July 31. Completed applications should be submitted to Cliff Bailey in AD01 or call 544-5482.

Thrift Savings Plan for Marshall employees open

Marshall employees can change their contributions to Thrift Savings Plan accounts until July 31. Employees also may begin contributions to their accounts during this period. There are five different funds to choose from. For more information, call Ginger Martin at 544-5654 or Debbie Allen at 544-7536.

Marshall Retirees Association offering university scholarship

Students who are descendants of a Marshall Center retiree can apply for the NASA-MSFC Retirees Association Scholarship at the University of Alabama in Huntsville. The \$1,000 scholarship will be awarded for the academic year beginning in the fall. For more information, call UAH Student Financial Services at 824-2755.

NASA Performance Evaluation Profile Survey required

All Marshall team members, civil service and contractor, are required to complete the Performance Evaluation Profile Survey. A training module is at the Safety, Health and Environmental Web site. The training module can be completed in about one hour. For assistance, or for more information, call Dennis Davis at 544-8628, or Kristie French at 544-7474.

Marshall cafeterias, grill and barbershop closed Friday

Cafeterias in Bldg. 4203, 4610 and 4471, as well as Charlie's Grill in Bldg. 4200 and the Barbershop in Bldg. 4203, will be closed Friday.

Did you once race a moonbuggy?

Planning for the 10th annual Great Moonbuggy Race, to be held in 2003, has begun. Organizers would like to find any Marshall team members who once raced on a moonbuggy team. For more information, call Durlean Bradford at 544-5920.

WebTADS training notice

NASA Administrator Sean O'Keefe has requested that time keeping be delegated to the employee level. Training is now available to Marshall employees on WebTADS timesheet entry and NASA standardized policies. The WebTADS training team will be contacting the administrative officer or management support assistant of each organization to coordinate training dates and location. The training sessions will last approximately two hours and will include timekeeping standardized policies and a WebTADS system navigation demonstration. Labs will be available as needed for additional practice. Administrative officers or management support assistants should call Pam Vaughn at 544-9372 for additional information.

AdminSTAR employee overview training dates set for July

The AdminSTAR employee overview training is designed to provide users with the core functionality of AdminSTAR learning management software application. Users will be able to identify methods to overcome AdminSTAR log-on barriers, use catalog and calendar features, review and print requested and approved training as well as cancel out of approved courses. All sessions will be in Bldg. 4200, Room G13A, on July 9 from 1-2 p.m. and 2:30-3:30 p.m.; July 24 from 1-2 p.m. and 2:30-3:30 p.m.; and July 25 from 1-2 p.m. and 2:30-3:30 p.m. To register, call John Heath at 544-2622.

Marshall picnic Aug. 17

The Marshall Center's annual picnic, "Family Fun Day 2002," will be from 10 a.m.-2 p.m. Activities will be held at

the Marshall picnic area with a children's parade beginning at 9:45 a.m.

AIAA 50th anniversary dinner meeting

The American Institute of Aeronautics and Astronautics Alabama-Mississippi Section is celebrating its 50th anniversary with a dinner and panel discussion. The meeting is at 5:30 p.m. July 25 at the Huntsville Marriott. Regular admission is \$20 and student admission is \$10. Reservation deadline is July 22. For more information, call Arloe Mayne at 881-7124 or Wanda Reece at 544-2630. The meeting is open to the public.

MARS tennis club to hold tournament

The MARS tennis club will hold an open doubles tournament on July 13. Warm-up starts at 8 a.m. with the tournament starting at 8:30 a.m. Teams can be man/woman, two men or two women. MTC members may invite a guest to play as their partner -- fee is \$3 per guest. To register, call Ronda Moyers at 544-6809.

Procurement retreat is July 18

The Procurement Office will hold an all-hands retreat from 8:30 a.m.-3:30 p.m. on July 18 at Ditto Landing Marina. The office will be closed on this date.

Engineering Directorate awards celebration set July 17

The Engineering Directorate awards celebration will be July 17 at the Marshall picnic area. For more information, call Pravin Aggarwal at 544-5345.

Air outage scheduled Friday

An air outage will occur from 6 p.m.-11 p.m. Friday in Building 4200 for scheduled maintenance work.

New barricades being placed

Redstone authorities are installing vehicle barricades in the outbound lanes at perimeter gates. Expect delays when exiting the arsenal.

Employee Ads

Miscellaneous

- ★ Sony 19" color TV, \$50; Entertainment center, 4'x4', \$50. 533-5942
- ★ Offshore fishing equipment; 3 each 50 lb. class reels w/stand-up rods & reels, various tackle. 351-6996
- ★ Sony 5-disk CD changer, tuner, dual cassette player, 10' tower speakers, cabinet, remote control, \$550. 961-4942 Jim
- ★ Snuggle baby carrier, \$8; Evenflo infant car seat w/base, \$25; diaper Genie, \$15. 851-2145
- ★ Oak entertainment center, holds up to 27" TV, shelves for audio/video equipment, 2-drawers, \$50. 325-6000
- ★ Monark aluminum boat, 15', semi-v, 18HP Johnson, MinnKota foot-controlled trolling motor, trailer, \$1,100. 353-5106
- ★ Whirlpool dryer, almond, large capacity, \$175; lift chair, beige, \$320; antique sewing machine, electric, \$50. 536-8414
- ★ Snow Village, 31-pieces, \$950; barrel table & 4-chairs w/matching couch, coffee, end tables, \$1,000. 895-6916
- ★ Waterbed, queen size, wave-less mattress, two heaters, padded side rails, \$100 obo. 751-2460
- ★ Local honey, \$5 quart, \$3 pint, \$1.75 12-oz. Bear. 837-8087
- ★ Two jet skis and double trailer, \$3,395 obo. 961-9611
- ★ Single waterbed, honey maple w/brass trim, includes heater, comforter & bedding, \$120. 859-0729
- ★ Whirlpool self-cleaning electric oven/range, white, \$150; side-by-side refrigerator w/ice in door, white, \$225. 536-4507

- ★ Washer & dryer, \$75/pair, almond refridgerator/freezer, drinks/ice in door, \$275, sleeper sofa, brown \$75. 774-5716
- ★ 1994 Starcraft Popup camper, sleeps 6, new a/c, \$2500. 683-5042 cell or 498-1221 home
- ★ New Zealand white rabbits and equipment. 828-3896
- ★ Sauder computer desk and printer stand, \$75. 883-7187
- ★ 14' boat w/trailor. New tires, rims, troller, 55HP Johnson motor; needs carb work. \$600. 683-2042

Vehicles

- ★ 1997 Plymouth Breeze, auto, air, cruise, 2.0L, 96K miles, new tires, well maintained, \$3,900. 828-1585
- ★ 1994 Chrysler New Yorker, loaded, color/driftwood, \$4,895. 828-4251
- ★ 1993 Nissan Kingcab, 140K miles, dark green, bedliner, toolbox, Sony CD, tinted windows, \$3,300 obo. 880-9888/337-7500
- ★ 1995 Nissan Quest GXE, left front wrecked, 105K miles, \$2,500 obo. 880-9888/337-7500
- ★ 1994 Plymouth Voyager Sport SE, rebuilt engine & transmission, 161K miles, white, loaded, \$2,750. 881-7096
- ★ 1995 Buick Park Avenue, full-power, loaded, 82K miles, \$6,000. 883-2863
- ★ 1988 Delta 88 Oldsmobile, white, 4-door, loaded, original owner, needs few repairs, \$1,100. 882-9695
- ★ 2000 Tacoma, standard cab, 5-speed, a/c, CD, 15K miles, \$10,499. 722-7955
- ★ 2001 Dodge Neon, 1,500 miles, a/c, 5-speed, 4-door, white, SE. 256-379-

- 2902
- ★ 1991 Nissan Stanza XE sedan, 114K miles, 5-speed, a/c, moonroof, \$2,600. 534-4968
- ★ 1995 Nissan King-Cab XE/V6 pickup, gray, 71K miles, automatic, a/c, \$6,500. 895-9589
- ★ 1987 Mercedes 190E, auto, 107K miles, sunroof, new tires, \$2,900 obo. 961-9533 or 325-7920
- ★ 2000 Honda CR-V EX, green. All wheel drive, CD, power locks/win dows, alloy wheels, garaged, \$15,950. 830-2903

Free

- ★ To good home, male dwarf hamster. 880-9015

Found

- ★ Chevrolet car keys w/tin can opener & electronic car door opener in Bldg. 4203 parking lot; claim at Rm. 5202/ Bldg. 4203 or call 544-0648 or 544-8086

Wanted

- ★ Used executive high back leather swivel\desk chair in good condition. 772-8718
- ★ Ride from North Atlanta, anytime, one time. 864-0155
- ★ HP calculator, 425, etc., 8HP, B&S vertical engine for carburetor parts. 881-6040
- ★ Porch glider swing, also would like to swap southern gospel music performace tracks. 256-931-2822
- ★ Old copies of Marshall Star, pre 1990. 533-6473

MARSHALL STAR

Vol. 42/No. 42

Marshall Space Flight Center, Alabama 35812
(256) 544-0030
<http://www1.msfc.nasa.gov>

The Marshall Star is published every Thursday by the Internal Relations and Communications Department at the George C. Marshall Space Flight Center, National Aeronautics and Space Administration. Contributions should be submitted no later than Monday noon to the Marshall Internal Relations and Communications Department (CD40), Bldg. 4200, room 101. Submissions should be written legibly and include the originator's name. Send electronic mail submissions to: intercom@msfc.nasa.gov The Marshall Star does not publish commercial advertising of any kind.

Manager of Internal Relations
and Communications — Steven Durham
Editor — Jonathan Baggs

U.S. Government Printing Office 2002-733-060-60010

Permit No. G-27
NASA
Postage & Fees PAID
PRE-SORT STANDARD